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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,086	05/31/2001	Ari P. Heikkinen	456-010392-US(PAR)	9314
2512	7590	02/27/2006	EXAMINER	
PERMAN & GREEN 425 POST ROAD FAIRFIELD, CT 06824			VO, HUYEN X	
			ART UNIT	PAPER NUMBER
			2655	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,086

Applicant(s)

HEIKKINEN, ARI P.

Examiner

Huyen X. Vo

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 8-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (US 6456964) in view of Kleijn et al. (US 6223151).

3. Regarding claims 1, 8, 12, and 15, Manjunath et al. disclose a method, apparatus, mobile device, and network element of encoding speech comprising the steps of: formulating a speech signal from utterances spoken by a speaker (*S(n)* in *figure 1*); classifying the formulated signal into different signal types based on periodicity exhibiting in speech signal (*col. 15, lines 1-20*); extracting pitch period for each frame (*col. 21, lines 39-67*); determining at least one voicing parameter based on the modified signal, the voicing parameter being either voiced or unvoiced (*figure 2 shows multiple encoder modes, each encodes a different type of signal disclosed in col. 15, lines 1-40*); deciding the encoding method based on at least one determined voicing parameter (*figure 2 shows multiple encoder modes, each encodes a different type of signal disclosed in col. 15, lines 1-40*); and encoding the modified signal in a speech encoder

(figure 2 shows multiple encoder modes, each encodes a different type of signal disclosed in col. 15, lines 1-40).

Manjunath et al. fail to specifically disclose the steps of determining an estimate of periodicity from the formulated signal by estimating pitch pulse locations from the formulated signal, and modifying the formulated signal using the periodicity estimate such that a pitch period of the formulated signal is changed and that the periodicity is improved. However, Kleijn et al. teach the steps of determining an estimate of periodicity from the formulated signal by estimating pitch pulse locations from the formulated signal (*col. 4, line 66 to col. 5, line 5*), and modifying the formulated signal using the periodicity estimate such that a pitch period of the formulated signal is changed and that the periodicity is improved (*col. 7, line 1 to col. 8, line 43*).

Since Manjunath et al. and Kleijn et al. are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention modify Manjunath et al. by incorporating the teaching of Kleijn et al. in order to enable the speech encoder to encode speech signal such that good signal quality is preserved when decoded by the decoder.

4. Regarding claim 2, Manjunath et al. further disclose a method according to claim 1 wherein the formulated speech signal is a digitized signal such as a residual signal produced from a coding algorithm such as Linear Predictive Coding (LPC) or the actual speech signal itself (*col. 5, lines 45-54*).

5. Regarding claim 3, Manjunath et al. further disclose a method according to claim 1 wherein the determining an estimate of periodicity step comprises obtaining a normalized pitch cycle by autocorrelation (*col. 10, line 26 to col. 11, line 40*).

6. Regarding claims 4-5, Manjunath et al. fail to specifically disclose that the modifying step includes normalizing the pitch by shifting the time domain discrete values of the residual signal to conform to the normalized pitch cycle, and the modifying step further comprises the speech signal being upsampled by interpolation such that suitable discrete values of the upsampled signal are shifted to conform to the average pitch cycle. However, Kleijn et al. further teach the step of normalizing the pitch by shifting the time domain discrete values of the residual signal to conform to the normalized pitch cycle (*col. 7, lines 59-67*), and the the speech signal being upsampled by interpolation such that suitable discrete values of the upsampled signal are shifted to conform to the average pitch cycle (*Interpolator 140 of figure 1*).

Since Manjunath et al. and Kleijn et al. are analogous art because they are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of invention modify Manjunath et al. by incorporating the teaching of Kleijn et al. in order to enable the speech encoder to encode speech signal such that good signal quality is preserved when decoded by the decoder.

7. Regarding claims 9-11, 13-14, and 16-18, Manjunath et al. further disclose that the formulating means includes software operating with a signal processor that is

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capable of generating a residual signal from a speech signal (*col. 21, lines 30-45*), wherein the apparatus includes a memory comprising a software operating with a signal processor for providing means for transforming, estimating, and modifying the speech signal (*col. 21, line 20 to col. 22, line 67*), wherein the apparatus is integrated into a mobile device (*the method disclosed in Manjunath is for used in telecommunication devices*).

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (US 6456964) in view of Kleijn et al. (US 6223151), as applied to claim 5, and further in view of Kleijn (US 5517595).

9. Regarding claim 7, the modified Manjunath et al. fail to disclose that the modified signal is down sampled prior to encoding in the speech coder. However, Kleijn (US 5517595) further teaches that the modified signal is down sampled prior to encoding in the speech coder (*col. 11, lines 25-35*). The advantage of using the teaching of Kleijn in the modified Manjunath et al. is to lower bandwidth for the gain below the extraction frequency of the prototype waveform to minimize coding errors.

Since the modified Manjunath et al. and Kleijn (US 5517595) are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Manjunath et al. by incorporating the teaching of Kleijn (US 5517595) in order to lower bandwidth for the

gain below the extraction frequency of the prototype waveform to minimize coding errors.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manjunath et al. (US 6456964) in view of Kleijn et al. (US 6223151), as applied to claim 1, and further in view of Donovan et al. (US 6266637).

11. Regarding claim 6, the modified Manjunath et al. fail to disclose that a pitch scaling algorithm such as Time Domain Pitch Synchronous Overlap-Add (TD-PSOLA) is used to normalize the pitch cycle lengths in an analysis frame. However, Donovan et al. teach that a pitch scaling algorithm such as Time Domain Pitch Synchronous Overlap-Add (TD-PSOLA) is used to normalize the pitch cycle lengths in an analysis frame (col. 4, ln. 1-25). The advantage of using the teaching of Donovan et al. in the modified Manjunath et al. is to minimize signal degradation so to preserve characteristics of the original signal.

Since the modified Manjunath et al. and Donovan et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Manjunath et al. by incorporating the teaching of Donovan et al. in order to minimize signal degradation so to preserve characteristics of the original signal.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huyen X. Vo whose telephone number is 571-272-7631. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HXV

2/3/2006



ABUL AZAD
PRIMARY EXAMINER